Integration of Biomonitoring Exposure Data into the Risk Assessment Process

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Improved biomonitoring techniques are being used to measure very low levels of environmental chemicals in the tissues of adults and children. Public and private demand for biomonitoring data are on the increase worldwide. In the United States alone, government-sponsored programs include the National Health and Nutrition Examination Survey (NHANES) conducted by the CDC, the CDC National Environmental Public Health Tracking Program, the Interagency National Children's Study, the Interagency Agricultural Health Study, the Farm Family Exposure Study, the pilot studies conducted by the U.S. Environmental Protection Agency (U.S. EPA) as part of the National Human Exposure Assessment Survey (NHEXAS), and the new project on Human Biomonitoring for Environmental Toxicants undertaken by the National Academy of Sciences.

Biomarker measurements can show that people have been exposed to chemicals and that these chemicals have been absorbed into the body. However, linkages to exposure on the one hand and human health effects on the other are not always clear. Meaningful interpretation of existing and future biomonitoring data will require rigorous, scientific approaches to data collection, analysis, interpretation, and application. The U.S. EPA and HESI have developed a research partnership among government, academic, and industry scientist to address this important area. In September 2004, the HESI convened an International Biomonitoring Workshop that was co-sponsored by the HESI, U.S. EPA, CDC National Center for Environmental Health (CDC/NCEH), Agency for Toxic Substances and Disease Registry (ATSDR), and International Council of Chemical Associations (ICCA). More than 100 invited scientists from U.S. government agencies, international groups, academia, and industry attended.

Participants explored the processes and information needed to put biomonitoring data into perspective for the risk assessment process, with special emphasis on integrating biomarker measurements of exposure, internal dose, and potential health outcome. Criteria for applying biomonitoring data were also considered. A series of papers is being published from the

workshop, including case studies for specific chemicals and conclusions and recommendations from the workshop as a means to promote further considerations by and discussion among the scientific community. It is anticipated that collaborative research projects will be developed among the partnering organizations as a next step in this work.

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